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west virginia department of environmental protection

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## ENGINEERING EVALUATION/FACT SHEET

### B BACKGROUND INFORMATION

Application No.:	R13-2332E
Plant ID No.:	041-00045
Applicant:	Latham Pool Products, Inc.
Facility Name:	Viking Pools -WV
Location:	Jane Lew
NAICS Code:	326199
Application Type:	Modification
Received Date:	February 26, 2013
Engineer Assigned:	Edward S. Andrews, P.E.
Fee Amount:	\$3500.00
Date Received:	March 4, 2013
Complete Date:	July 9, 2013
Due Date:	October 7, 2013
Applicant Ad Date:	March 27, 2013
Newspaper:	<i>The Weston Democrat</i>
UTM's:	Easting: 552.2 km      Northing: 4,328.1 km      Zone: 17
Description:	The application is for specific changes to the conditions in Permit R13-2332D and to increase operational flexibility in the TFM system for counting actual resin and gel coat usage on a real time basis.

### DESCRIPTION OF PROCESS

The Viking Pools facility (Facility) manufactures swimming pools, spas, and related products made of fiberglass reinforced plastic composite. There are two production lines (i.e. Building One and Building Two). The manufacturing process is semi-continuous which essentially consists of applying multiple layers of gel coat and resin to a mold to produce a product (e.g. pool). For certain brands/products, gel coats and or resins can be applied "filled" containing a material that imparts an aesthetic or structural characteristic to the product. The specific steps and materials used are dictated by the shape, size, color, and style of the brand/product.

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## SITE INSPECTION

On May 21, 2013, the writer conducted an announced visit of the facility. Several members of the corporate environmental & safety staff and production management team members of Latham Pools Products, which included their consultant, were on hand for this visit.

This included a complete walk through of both buildings and review of current record keeping efforts which include going over the TFM system. There were no potential issues discovered that would adversely affect how the facility maintains its ability to comply with the permitted limits and other applicable rules and regulations.

The TFM system actually counts the amount of resin or gel coat as applied by the individual operator. Latham has determined the target amount for each application step for each individual product. The operators' goal is to apply the targeted amount of resin or gel coat ( $\pm 10$  percent) to the substrate in an effort to fabricate the desired product. The system allows the operator to know if he/she is actually hitting the target number during the actual process step. The system allows Latham to monitor product quality during the manufacturing process, continuous monitor inventory, and determine emissions with less human error in measuring material consumed.

The TFM system works by counting the strokes of the resin/gel coat pump. The stroke is counted by a sensor that is connected to the exhaust port of the pump. For each stroke the sensor sends a signal to the monitor that displays exactly how much resin/gel coat has been applied. Once a specific application step for a particular product is complete, the monitoring system records the actual usage for the step.

During this visit, the writer noted that the operators were standing on the actual product/mold to apply the material. In the past, operators would either stand or lay on mobile scaffolding to apply the gel coat or resin to the bottom of the product. By standing on the actual product, there is a more consistent spray distance between the operator and the substrate. This allows the operator to calibrate the spray gun for this specific distance using controlled spray techniques. In the past, the scaffolding would have to continuously be adjusted and still never allow the operator to maintain the same distance from the substrate safely. Latham has employed a fall arrest system for the application operator and other personnel to stand on top of the actual product in a safe manor to fabricate the product.

The improvements in tracking resin/gel coat usage and maintaining a consistent distance should reduce emissions of styrene and increase the accuracy of determining actual emissions from the manufacturing process.

The overall setup for the site remains nearly the same from the last time the writer visited the facility. Building One (Viking Pools Building) has two production lines in the

manufacturing area. Building Two (CPC Pools Building) is divided. Half is used for storage of materials (resins/gel coats) and the other part is used to fabricate/repair molds.

The storage yard/plant road ways are maintained with a good base of crusher run stone, which minimizes fugitive dust generated from mobile equipment. Overall, the writer believes that the conditions within the buildings and grounds have improved since the last visit.

#### ESTIMATE OF EMISSION BY REVIEWING ENGINEER

This proposed application does not call for any significant changes that affect the facility potential to emit or any permitted limits. In the past and currently used, the facility potential and actual emissions from the composite manufacturing process were determined using the appropriate methods outline in ANSI/ACMA Unified Emission Factors.

The only proposed emission increase is the result of relaxation of the collection efficiency of the filter media in the manufacturing (fabrication) areas. The applicant claims the relaxation would only cause a minor increase in annual emission of 0.6 tpy of particulate matter (PM) and PM<sub>10</sub> less than 10 microns (PM<sub>10</sub>). The facility has been changing the filter about 3 times a week by monitoring the drop pressure across them. This is very frequent. The application proposes to reduce it from 95 to 90% removal efficiency.

The reduction will most likely result in no emission change. The styrene in the polyester resins that the facility uses wants to react fairly quickly (i.e. seconds). So, the reacted styrene on the filter will actually increase the removal efficiency until the entire filter surface is pugged off, which would cause mechanical problems with the ventilation system.

Second, Latham has employed several measures, which may be viewed as product quality improvements or reductions in operating expenses that have reduced emissions. These measures are reducing material applied which reduces PM/PM<sub>10</sub>, and VOC/HAP emissions.

The writer considers the changes proposed by the applicant non-emission related and did not evaluate the VOC/HAP emissions in this action.

#### REGULATORY APPLICABILITY

The proposed changes made by Latham do not affect the facility's applicability status with any rules or regulations. The changes mainly seek relief of specific conditions that restrict the facility's ability to use certain materials accidentally, changes in materials used by the facility, or redundancy. The facility will remain subject to 45 CSR 7, 45 CSR 30, 45 CSR 34, and Subpart WWW of 40 CFR 63.

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Most of the proposed changes call for the omission of the usage and/or material restrictions, which is viewed as a relaxation of specific conditions. Thus, the source is required to obtain a modification permit pursuant to 45 CSR 13.

The facility's potential to emit VOC emissions will not change as a result of this modification application. Thus, the facility's status as a synthetic minor source under the PSD program (45 CSR 14) will be maintained. Latham's operation is classified as an existing major source of HAPs under 40 CFR 63, Subpart WWWW – National Emission Standard for Hazardous Air Pollutants (4W NESHAP): Reinforced Plastic Composites Production. The proposed changes do not affect the facility's ability to comply with this regulation but just corrects the actual codified applicable provisions that are in Section 6 of the permit.

As a result of these changes, the source is to required submit a significant modification application for their Title V Permit, which was included with this modification.

#### TOXICITY OF NON-CRITERIA REGULATED POLLUTANTS

The proposed changes will not emit any pollutants that aren't already being emitted at the facility. Therefore, no information about the toxicity of the hazardous air pollutants (HAPs) is presented in this evaluation. Further, the facility is currently and will remain a major source for HAPs and these emissions are regulated under 4W NESHAP.

#### AIR QUALITY IMPACT ANALYSIS

The writer deemed that an air dispersion modeling study or analysis was not necessary, because the proposed modification does not change the facility's status as a non-major source (i.e. less than 250 tpy of VOCs) as defined in 45CSR14.

#### MONITORING OF OPERATIONS

The facility has enhanced the means of measuring the amount of gel coats and resins applied during the manufacturing process. The permit sets compliance with the specific emission limits based on limiting content and application rates in the permit. Latham and the writer agree that compliance should be structured by demonstrating compliance directly with the permitted emission rates rather than using material restrictions and limitations. However, the current form of monitoring and record keeping will remain in place. Latham will be required to take the monitoring data and processing into actual emissions, which they currently do for Title V Reporting purposes (Emissions Inventory and Certified Emission Statements).

## CHANGES TO PERMIT R13-2332D

The main focus of this modification is changes to specific conditions within R13-2332D. The application proposed making sixteen changes to Permit R13-2332D and the corresponding Title V Operating Permit. The following is a list of proposed changes requested by the applicant:

1. Amend Condition 3.5.6. to reflect that submittal of a revised Styrene Odor Control Plan would only be required in the case of a written request being issued by the Director.
2. Strike “Application Technology” requirements for mechanical atomized spray equipment from Condition 4.1.1. as such conditions are only relevant for non-atomized equipment.
3. In Condition 4.1.2. strike all methyl methacrylate (MMA) short-term emission limits(lb/hr), as MMA emissions are not addressed in Viking Pools’ Odor Control Plan dated November 4, 2005 (the “OCP”). Further, limit styrene emission from each building to 154.2 lb/hr only, which is consistent with the original basis for addressing potential concerns covered in the OCP and does not represent an increase in the current permitted maximum hourly styrene emissions limit. Lastly, strike all short-term styrene emission limits and sub-limits.
4. In Condition 4.1.3., strike MMA and styrene, as they are not pollutants regulated under the PSD program and their emissions are duly regulated and limited under 4W NESHAP. In addition, limit only combined VOCs emission resulting from the usage of gel coat and resin in Building 1 and Building 2 for fiberglass reinforced plastic composite products manufacturing to 164.7 tons per year in order to maintain the source as a PSD synthetic minor.
5. Strike Condition 4.1.4., as this condition is not necessary to ensure compliance with the limits in Conditions 4.1.2. and 4.1.3. (as proposed to be modified), nor with 4W NESHAP requirements. Further, the source needs the operating flexibility to use a wide array of materials to manufacture products under the various brands Viking Pools currently controls.
6. Amend Condition 4.1.6. to apply only to non-atomized spray equipment.
7. Amend Condition 4.1.11. to allow 100% capture to be demonstrated through meeting design and operational requirements equivalent to those specified in Method 204; and to allow for 70% particulate matter control efficiency.
8. Amend Condition 4.1.13. to apply to mechanically ventilated areas and to allow more than on overhead door open when introducing molds or removing pools from Building One or Building Two.

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9. Amend Condition 4.1.16. to apply to mold sanding, and a 90% particulate matter control efficiency.
10. Amend Condition 4.2.2. to allow for daily operating hours records to be kept; daily average styrene emission records for each building; and records of the 12-month rolling total VOC emissions from both buildings combined; and for all such records being compiled; and for all such records being compiled no later than 30 days from the end of each calendar month, consistent with recordkeeping required under the 4W NESHAP.
11. Amend Condition 4.3.1. to require a “permanent total enclosure” test, which is the variation of Method 204 and Viking Pools has historically used to comply with this requirement.
12. Strike the styrene, methyl methacrylate (MMA) and Total HAPs limits from Condition 5.1.1., as their emissions are duly regulated under 4W NESHAP requirements and such limits are not necessary to ensure compliance with criteria pollutant (i.e. VOC, PM/PM<sub>10</sub>) emission limits that establish the Facility as a PSD synthetic minor source.
13. Strike Condition 5.1.2. and 5.1.3. as they are not necessary to ensure compliance with the emission limits set forth in Condition 5.1.1., and also to allow the source the operating flexibility to use a wide array of materials to manufacture products under the various brands Viking Pools currently controls.
14. Amend Condition 5.1.4. to relate only to emissions from mold manufacturing.
15. Amend and/or strike as necessary any and all language and requirements in the permit that is not directly applicable to Viking Pools’ operations or that does not exactly reflect the codified language and requirements of the 4W NESHAP.
16. Strike Condition 6.5.2. as it is not consistent with the codified language and requirements of the 4W NESHAP as it applies to products made for corrosion resistant end use application.

After reviewing these proposed changes/suggestions, these requested changes mainly focused on a few points which are:

- Operational flexibility, Latham owns five brands of pools and the current permit limits the manufacturing operation to three of the brands. Two of the brands require materials that are prohibited or contains other VOC/HAP compounds not listed in the permit.
- Only the non-atomizing spray guns (Fluid Impingement Technology, FIT) is the true control technology that the facility employs to reduce VOC/HAP emissions from the manufacturing process. Atomizing spray guns are currently employed to

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apply gel coats and filled resins (ceramic spheres are added to the resin before it is delivered to the spray gun). To control VOC/HAPs from the atomizing spray gun is to use lower VOC/HAP monomer resins and gel coats or add controls. Added controls are typically not feasible for the type of operation at Jane Lew.

- Permit R13-2332D regulated the HAP emissions in two fashions, which are hourly and annual styrene/MMA limits and the Total HAP limits set forth in 4W NESHAP. The permit requires the facility to show compliance using different methods for common pollutants but does not track new pollutant as the resin industry changes their formulas. The hourly/annual individual limits were backed up with specific material limitations (content and usage restriction) while the NESHAP required demonstrations using one or more of methods outlined in the rule.
- With regards to 4W NESHAP, the applicant is requests to allow the NESHAP to regulate the Total HAP emissions as it was intended. The NESHAP covers most activities associated with the composite manufacturing process which is includes mold fabrication and work practices.
- The applicant claims that the styrene odor plan is out dated or not representative of the current permitted styrene emission rate.

During the review of Permit R13-2332C, the writer has little confidence in the UEF methods to determine emissions from the open molding process. Since the writer has access to test data from another open molding process which includes a comparison of test results to predicted rates using UEF methods. This new data shows that the UEF methods can accurately predict styrene and MMA emissions from the open molding process. All but one of the compliance options uses a version of the UEF methods. The other option is actual performance testing.

Under 4W NESHAP, Latham only has one compliance option available to them, which is the *weighted average emission limit option*. The process data need to comply using the *weighted average emission limit option* would be nearly the same needed to determine actual VOC/HAP emission rates. Thus, the writer recommends re-configuring the permit from a material restriction approach to direct compliance with the VOC limit using UEF methods and process data.

Another issue was relying on human judgment to measure partial full containers and not knowing when actual inventory was audited (trued up). Latham has nearly eliminated this problem with the TFM system of continuously measuring what is being applied except for the mold fabrication and repair. The mold fabrication repair area uses very small quantities of gel coats and resins that the error in the current system would be insignificant. Furthermore, Latham is using the system with the UEF methods to determine actual emissions for Title V reporting purposes.



The writer did not accept the applicant's suggestions, which only offered replacement language for the omitted conditions. The writer recommends omitting the usage and content restrictions in Conditions 4.1.2 through 4.1.3. and replace them with emission limits in revised Condition 4.1.1.a & b. The emission limits were incorporated from existing Conditions 4.1.3., 4.1.8., and 4.1.9. into Condition 4.1.1.a. Conditions 4.1.6., 4.10 was reorganized into 4.1.1.c., The application technology requirements in Condition 4.1.1. and operating requirement in 4.1.5. was consolidated into 4.1.1.d. & f.

The permanent total enclosure (PTE) requirements of Conditions 4.1.11. and 4.3.1. were revised. The applicant claimed that the requirements were unnecessary once the applicant conducted a satisfactory Method 204 test. This is confirmed in Air Pollution Control Technology Fact Sheet EPA-452/F-03-033 that once a PTE has been confirmed no additional capture efficiency test is required. Thus, Condition 4.3.1. was omitted. The revised condition establishes a primary indicator of that PTE is achieved by measuring facial velocity of 200 feet per second or greater, which this facial velocity is directly taken from the fact sheet. There is a requirement to maintain a PTE in the manufacturing areas (Condition 4.1.1.e.) and there needs to be a reasonable parameter to measure to indicate compliance, which will be based on EPA guidance.

The grinding activities in Condition 4.1.16. is associated with the mold fabrication and repair. Thus, Condition 4.1.16. was renumbered to 5.1.5. Section 5.0 is dedicated to mold fabrication and repair activities. Most of the remaining conditions in Section 4.0 were re-numbered, except for a few conditions that required monitoring that pertain to HAPs. The facility is subject to 4W NESHAP, which is outlined in Section 6.0 of the permit.

The resin and gel coat manufacturers are changing the formula of these materials to the point other monomers are slightly substituting/reducing the content of styrene and MMA in these products. These monomers fall into two categories VOC monomer or VOC/HAP monomer. The existing VOC limits and the 4W NESHAP would pull in these new monomers without any new or additional language in the permit. Only the permit needs to be structured under the monitoring plan. However, the existing permit adds confusion by setting specific limits for styrene and MMA but no other limits for any other specific HAP. 4W NESHAP sets a total organic HAP limits for each process step or specific application. The HAPs emitted by the facility are organic HAPs and are regulated under the permit as VOCs too. Therefore, the writer recommends omitting the specific HAP limits in Sections 4.0 & 5.0 and incorporate 4W NESHAP limits.

#### RECOMMENDATION TO DIRECTOR

The information provided in the permit application indicates the proposed modification of the facility will meet all the requirements of the applicable rules and regulations when operated in accordance with the permit application. Therefore, the writer recommends granting a Rule 13 modification permit for their composite manufacturing facility in Jane Lew, WV

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August 27, 2013  
Date

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